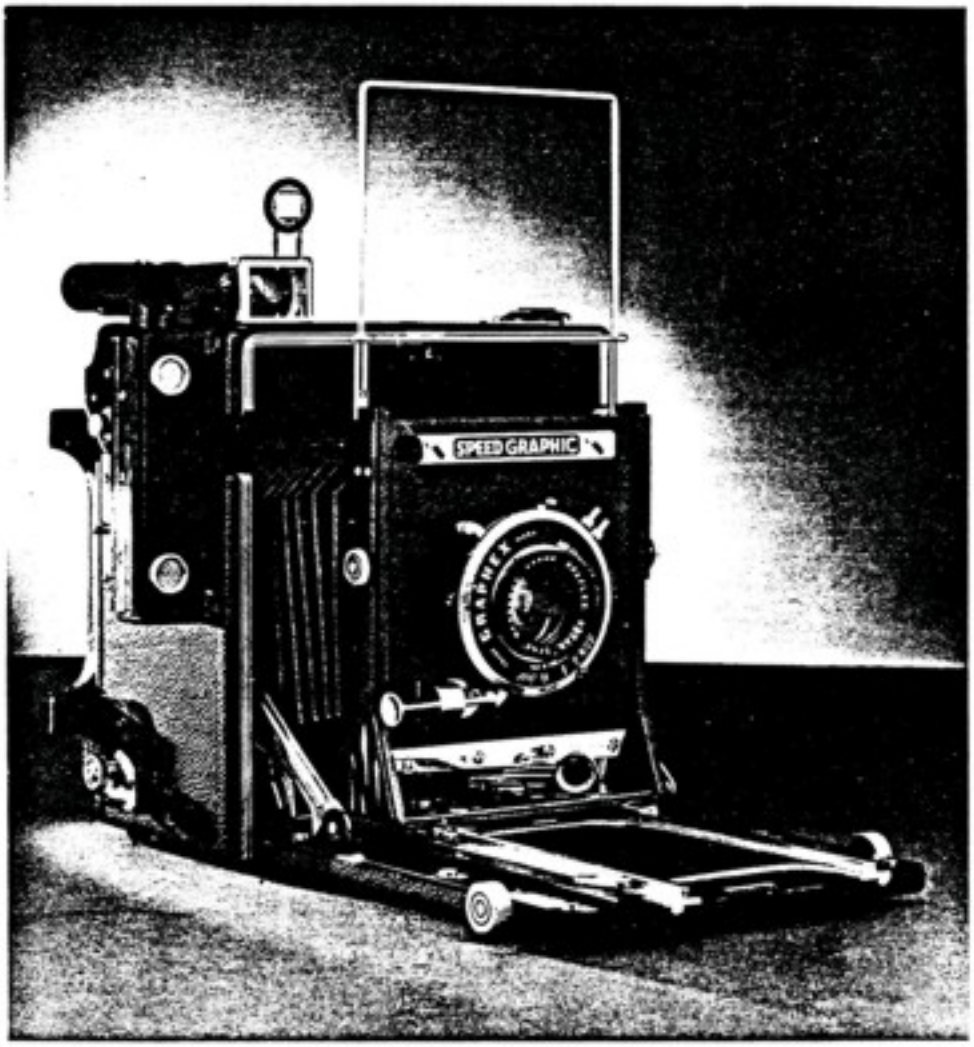
Section 3

4 X 5 ANNIVERSARY SPEED GRAPHIC



Bellows: 2 1/2 in. min. to 13 in. max.

Lensboard: 4 in. square, Model C. (Cat. No. 2903)

Lens limit: 3 1/4 in. max. dia. of rear element
1 7/16 in. forward from lensboard to closed bed.

GRAFLEX, INC.
Rochester 8, New York

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Optical Viewfinder - Refer to Section 102

Miscellaneous Parts

Special precautions for:

1. Bellows
2. Peepsight - folding
3. Idler lubrication
4. Bed catch

1. Bellows (#16034).

Removal

a. Remove the back, set the curtain at "O", remove the side screws of the idler frame and the idlers.

b. To free the rear of the bellows from the camera body, pry out the 20 small nails (#6459) and remove the bellows and front standard from the front of the camera.

c. Working inside the bellows, remove 8 screws (#29796) which secure the front bellows frame to the lensboard frame.

Replacement

d. With the seam down, assemble the 8 screws which secure the front bellows frame to the lensboard frame. Tack the sides of the bellows first to the inside frame; then, support the wood frame by inserting something of suitable thickness and strength over the curtain roller to act as a levered support, while tacking the top and bottom edges. Plug any holes with a mixture of lampblack, whiting and glue or some other suitable material.

e. Replace the idler frame securely against the inside frame, straighten the curtain, and reassemble the back.

2. Folding Peepsight (#25036).

This peepsight is used with the front wirefinder (#25026) which has a slide bushing 2-1/4" long. To remove excess play from the peepsight, remove the hinge pin, reform each of the right angle tabs to form 90 degrees, and from the center section of the base plate upward about 1/32 inch above the outside section. Reassemble.

3. Idler Lubrication.

Remove the idlers and frame, clean in solvent, dry, and lubricate the bearings with graphite grease.

4. Bed Catch (#22528).

If the bed catch (#22528) should fail to open the bed when the top release button is depressed, the bed can possibly be eased open by inserting a piece of very stiff "L" shaped wire. Insert the hook through the crack and twist the wire hook down against the catch while depressing the button -- in many cases, this will open the bed. If the catch plunger sticks or is rusted, replace the catch and/or lubricate the spring and plunger with light oil, (wipe away excess oil). At this time, adjust the hooking portion of the catch to eliminate future jamming.

6459

29796

16044

151 B0-3

16001

21999

150 B3-6

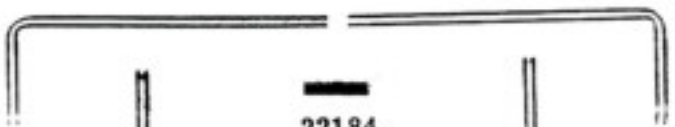
17471

25060

25036

152 B1-3

30084



22184

25065

25066

150 B1-4

25054

2071

150 B2-4

25067

25068

151 B2-4

15696

22528

SM-11

	Miscellaneous Camera Body Parts	List Price
150 B1-4	Screw - bed stop to body (1/4" #1 FH L17)	.01
150 B2-4	Screw - side tripod bushing to body (1/4" #2 FH L12)	.03
150 B3-6	Screw - idler block to body (3/8" #2 FH S18)	.03
151 B0-3	Screw - roller shield to body (3/16" #0 RH L5)	.03
151 B2-4	Screw - bed catch to body (1/4" #2 RH L17)	.03
152 B1-3	Screw - folding peepsight to body (3/16" #1 OH P19)	.03
2071	Tripod bushing - side (use screw 150 B2-4)	.15
6459	Nail - bellows to rear frame	.01
15696	Foot - camera	.03
16001	Shield - bottom tension roller	.40
16034	Bellows - (use rear frame nail 6459 and front frame screw 29796)	6.95
16044	Shield - top gear roller	.40
17471	Idler - curtain	.85
21999	Idler block assembly (use screw 150 B3-6)	.50
22184	GRAFLEX name plate - front moulding (See Substitute Parts List)	
22528	Bed catch assembly (use screw 151 B2-4)	.75
25036	Peepsightfinder - folding (use with wire finder 25026)	1.15
25054	Stop - bed (use screw 150 B1-4)	.15
25060	Plate - shutter speed (use pin 30084)	.15
25065	Moulding - top right	.60
25066	Moulding - top left	.60
25067	Moulding - lower right	.60
25068	Moulding - lower left	.60
29796	Screw - bellows to front standard (#2 FH Parker Kalon)	.01
30084	Pin (tack) - shutter speed plate to body	.01

Substitute Replacement Parts

Parts as listed	Order as replacements	
22184	30640-P2 Nameplate	.10

Order by part number and complete name. State quantity.

Prices are subject to change without notice.

193-355

Bed Assembly

Special precautions for:

1. Focusing pinion tension
2. Bed block and guide replacement and adjustment
3. Focusing pinion replacement
4. Yoke replacement
5. Lock replacement and adjustment
6. Focusing scale
7. Bed inspection - check list
8. Bottom tripod socket repair

1. Focusing Pinion Tension.

If the tension adjustment screw (#24246) located on the right side of the pinion is tightened, the tension on the pinion should increase, however, if the tension does not increase, the tension pads (#24250) will need to be added. The tension should be just enough to hold the yoke when the camera is tilted forward without the yoke lock lever being set. This does not apply to beds with lock screw part #22131.

2. Bed Block and Guide Replacement and Adjustment.

Disassembly

a. Remove the front standard from the yoke, and if necessary, remove the focusing scale and the side bed brace plates (#25004 and #25005). Remove the yoke guide screws, the yoke guide and the yoke; the bed block may now be removed - press the side brace ear outward slightly for clearance if necessary. Clean yoke guides and yoke in solvent, dry and lubricate with wax base lubricant.

Reassembly

b. If the bed blocks have been removed, position the focusing pinion with the yoke lock post to the right of the bed, position the shaft spring (#20041) and the bed brace plunger spring (#25037) and plunger (#22117) beneath each of the blocks and against the outside edge. Reassemble the bed block screws and tighten. Reassemble the yoke guides with the yoke, replace the screws, press both of the guides to the center with equally steady pressure and tighten the guide screws.

c. Adjust the yoke lock lever by sliding the yoke case section back out of the guides after the bed has been dropped. If the post type lock (see focus pinion part #24251) is used, assemble sleeve (#24244), tensions pads (#24250), and the tension screw (#24246). For either the post type or the square head screw type (#22131) assemble the lock lever (#22130); the lever should not lock when forward, but must lock when turned about 60 degrees to the right --- restart double lead thread or use spacer washer (#25063) to obtain satisfactory locking action.

Adjustment

d. If the side brace plate has been removed, check the bottom of the bed and case with a straight edge. Check guide surface of the yoke by laying a straight edge on top surface of each side. Adjust by slight repositioning of the side brace plate. Slide standard from case to bed and note any unevenness at the hinge ... if the bed is low, shim beneath bed block with thin fiberboard; or, if the bed is high, draw down by tightening bed block and guide screws. Check focusing scale and rangefinder ... adjust rangefinder infinity with the case yoke eccentric screw.

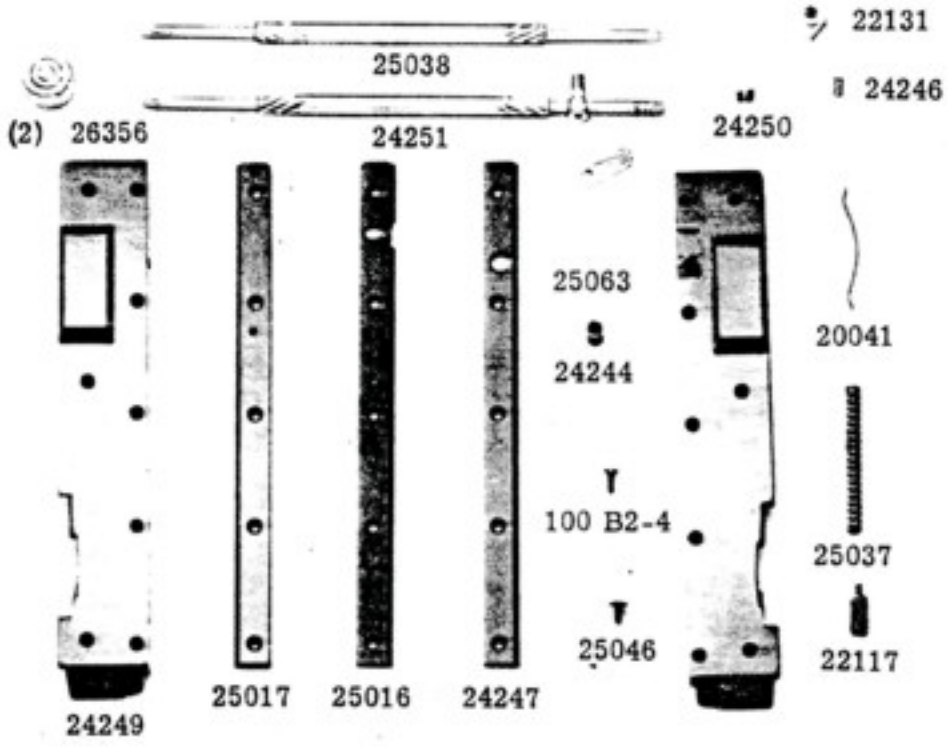
3. Focusing Pinion Replacement.

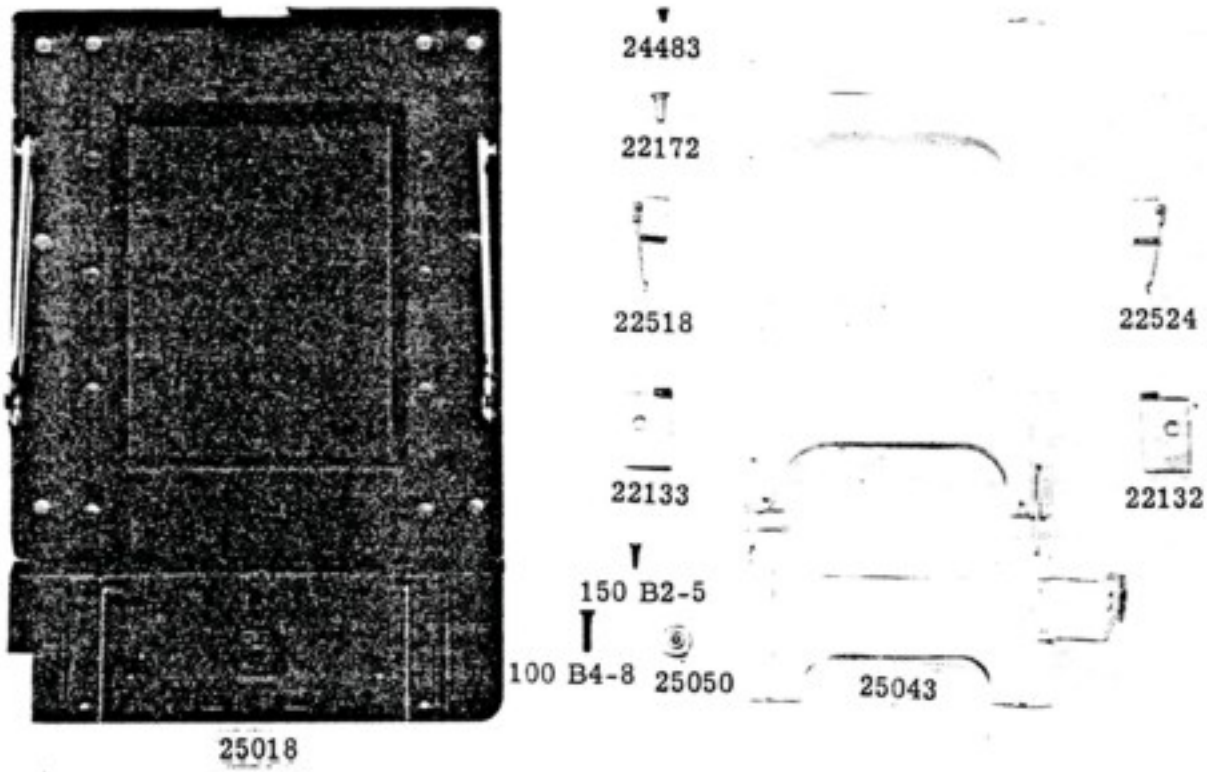
See paragraph 2 above for disassembly, reassembly and adjustment of bed. Lubricate the focusing pinion shaft bearing surfaces with wax base lubricant.

4. Yoke Replacement.

See paragraphs 2b, c and d for assembly and adjustment.

(Cont. on page 48)


22131
25038
24246
(2) 26356
24251
24250
25063
20041
24244
100 B2-4
25037
25046
22117
24249
25017
25016
24247


24483
22172
22518
22524
22133
22132
150 B2-5
100 B4-8
25050
25043
25018

SM-12

		List Price
28344	BED ASSEMBLED COMPLETE (Includes the twenty-two current items below)	$33.50
100 B2-4	Screw - Yoke guide (1/4" #2-56 FH L5) (For use with #24247,#25017 ONLY)	.01
20041	Spring - Focus pinion shaft	.03
22117	Plunger - Bed brace spring	.10
22130	Lever - Yoke lock	.25
22131	Screw - Lock (Obsolete, order as replacement only)	.20
22132	Stop - Right yoke	.05
22133	Stop - Left yoke	.05
22172	Bushing - Yoke guide screw	.01
24244	Sleeve - Yoke lock lever	.05
24246	Screw - Yoke tension (3/16" #3-48 Headless-P22)	.03
24247	Guide - Right bed yoke	.60
24248	Block - Right bed	.65
24249	Block - Left bed	.65
24250	Pad - Yoke tension	.03
24251	Focusing pinion assembly (Order 2 knobs #26356)	2.85
25016	Guide - Right (Obsolete, order only as replacement)	.60
25017	Guide - Left	.60
25018	Bed and hinge	5.75
25037	Spring - Bed brace plunger	.05
25038	Pinion (Obsolete, order only as replacement with 2 knobs #26556)	2.85
25043	Yoke assembly	12.00
25046	Screw - Bed block	.03
25051	Covering (not illustrated)	1.20
25063	Washer - Yoke lock spacer (as required) (order replacement)	.03
26356	Knob - Focusing	.25
22518	Stop - Left infinity	.80
22524	Stop - hight infinity	.80
100B4-8	Screw - Yoke guide to case (1/2" #4-40 FH L5)	.05
150B2-5	Screw - Bed hinge (5/16" #2 FH L12)	.03
24483	Screw - Focus scale	.05
25050	Washer - Yoke guide screw	.03
152B2-4	Screw - Side arm plate (1/4" #2 OH L17)	.01
25004	Plate - Right side for bed arm brace	.35
25005	Plate - Left side for bed arm brace	.35

Substitute Replacement Parts

Parts as listed	Order as replacement		
25063	30473-P11	Washer - Yoke lock (as required)	.01

5. Lock Replacement and Adjustment.

See paragraph 2c.

6. Focusing Scale.

For information pertaining to focusing scales, refer to Section 101.

7. Bed Inspection Check List.

a. Note focusing pinion action, for bind or grate	Check straightness, clean and lubricate.
b. Note side play and alignment as the case yoke engages the bed section	See paragraph 2d.
c. Lock lever	See paragraph 2c.
d. Focusing pinion tension	See paragraph 1.

8. Bottom Tripod Socket Repair.

a. If the bottom tripod socket has broken free, remove the bed from the camera body. It will be necessary to remove the side arm brace plates, three #2 x 5/16" flat head screws, part #150 B2-5, from the inside and four #4-40 x 1/2" flat head screws, part #100 B4-4 from the bottom.

b. Level the broken hinge emboss (file or peen smooth).

c. Position a side tripod nut (#2071) (see Section 3A, page 3). Cut a plate about 3/4" diameter and drill three 1/8" holes to correspond to the three holes in the nut flange. Lay the plate over the nut and assemble to the camera body with three #2 x 1/4" round head screws (151B2-4).

d. Reassemble the bed and check with paragraph 7.

Front Complete and Handle

Special precaution:

1. Lensboard frame and slide locks.
2. Lock lever and lateral shift lock spring replacement and adjustment.
3. Wirefinder
4. Handle
5. Substitute replacement parts

1. Lensboard frame and slide locks.

The lensboard frame (#25022) is secured to the bellows from the inside by eight #2 flat head Parker Kalon screws (#29796).

The slide lock (#20605) should be lubricated by wiping the back with a wax base lubricant.

2. Lock lever and lateral shift lock spring replacement and adjustment.

The lateral shift lock spring (#22176) is secured to the bottom of the standard by a #1/4-28 x 3/8" hexnut (#22108). Note the screwslot - do not move unless the lock tension is to be changed.

The lock lever (#22501) is secured by the hexnut on the bottom and threaded through the standard. When reassembling, lay the two lock balls (#22104) in their sockets, first assemble the spring washer (#22185) over the lock lever screw, then, assemble the flat washer (#22186) over the screw and thread through the standard. Replace the shift spring, locknut, test the locking action on the bed. To tighten the lock, loosen the locknut on the bottom side and turn the screw in a counterclockwise direction, to loosen the lock, turn the screw in a clockwise direction and then tighten the locknut.

3. Wirefinder.

The wirefinder and peepsight combination must be used as the table below indicates.

Peepsight	Wirefinder
Folding sight #25036	#25026 (bushing 2-1/4" long)
Swing sight #22196	#25095 (bushing 2-1/2" long)

Lubricate the sliding parts by wiping with a wax base lubricant.

4. Handle.

Early models of this camera use wood screws to secure the handle plates. To use the retaining plates, (#25096) and machine screws (#100-3-8)and #102-3-8) that are listed, drill through the center of the wood screw hole with a .099" diameter (#39) drill and assemble the machine screws into the retaining plate (#25096) which is positioned inside the case.

5. Substitute replacement parts.

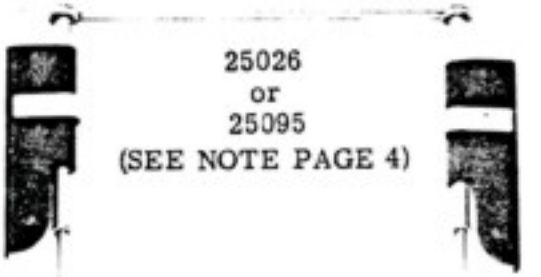
a. Handle assembly

(1) Handle assembly #25044 is replaced by handle #33779-G1 and requires the use of two new handle brackets #30374-P1, two handle bracket nuts #30375-P1, and two screws #104B6R8.

(2) To position the handle brackets, place the template (Fig. 1) on the left side of the camera, align the top, bottom, and front of the template with the camera and drill six 0.144" holes as indicated. Position handle bracket nuts from inside of camera case and clip off the ends protruding from outside of camera box until approximately 1/32" of the end protrudes. Mount handle bracket and secure with screw.

(3) The handle is assembled as shown in Fig. 2.

(Cont. on page 4C)



25026
or
25095
(SEE NOTE PAGE 4)

22501

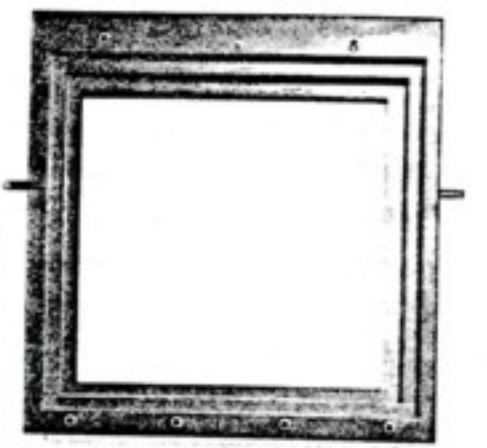
25021

NOT AVAILABLE → 24815

SPEED GRAPHIC
20605

22176

26355-P2



25022 AND 4918

22108

22186

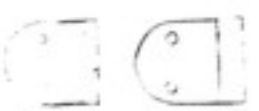
22185

25048

102-3-8

24471 4

100-3-8



24674

24672

SM-13 NOT AVAILABLE

25044

25096

		List Price
25012	FRONT COMPLETE (Includes 25023, 25047 and 26355-P2)	$16.00
25023	LENSBOARD FRAME COMPLETE (Includes six items below)	3.50
4918	Pin - Slide lock centering	.01
20605	Slide Lock - Lensboard	.45
24471	Screw - retaining strip (3/16" #2 OH Parker Kalon)	.04
24615	Screw - lensboard slide lock	.10
25022	Frame (with inserts) (Order pin #4918)	2.60
25048	Strip - Lensboard retainer	.45
25047	STANDARD COMPLETE (Includes seven items below)	10.50
22104	Ball - Standard lock	.04
22108	Nut - Front standard screw	.04
22176	Spring - Shift lock	.40
22185	Washer - Front standard, spring	.04
22186	Washer - Front standard, flat	.01
22501	Lever (lock) assembly	1.90
25021	Standard assembly	8.60
26355-P2	Nut - Rising Front Lock (order replacement)	See below
25026	WIRE FINDER (Use with folding peepsight 25036)	4.20
25095	WIRE FINDER (Use with swinging peepsight 22196)	4.20
25044	HANDLE ASSEMBLY (Non-adjustable) (order replacement)	See below
	PARTS FOR ATTACHING HANDLE ASSEMBLY (order for replacement only)	
100-3-8	Screw - Handle lug (1/2" #3-48 FH P19)	.03
102-3-8	Screw - Handle catch (1/2" #3-48 RH P19)	.03
24672	Catch - Handle	.25
24674	Spring - Handle catch	.25
25096	Plate - Handle reinforcement (tapped for #3-48 thread)	.20
104B6R8	Screw - Handle bracket (Use with #33779-G1 only)	.05
30374-P1	Bracket - Handle (Use with #33779-G1 only)	.40
30375-P1	Nut - Handle bracket (Use with #33779-G1 only)	.10

Substitute Replacement Parts

Parts as listed	Order as Replacement	
25044	33779-G1 Handle assembly (See paragraph 5)	1.85
26355-P2	30444-P1 Nut - Rising front lock	.25

Order by part number and complete name. State quantity.

Prices are subject to change without notice.

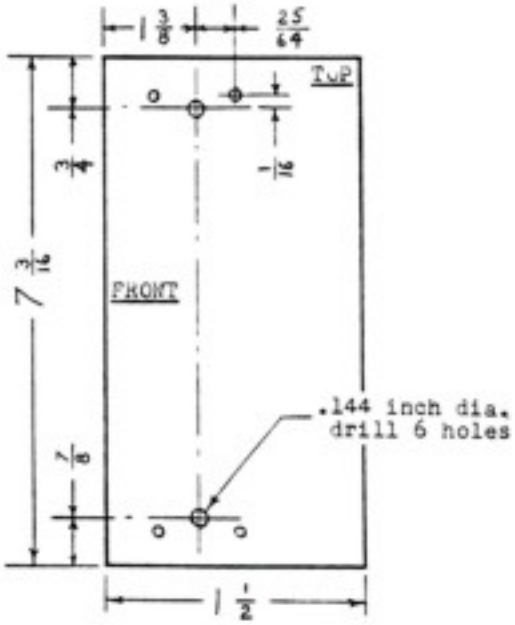


Figure 1. Template-Handle mounting

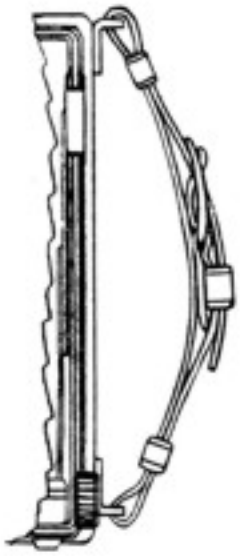


Figure 2. Handle Assembly

GRAPHIC BACK

Special precautions for:

1. Focusing panel springs
2. Ground glass replacement (also panel catch)
3. Panel door spring (also panel door)
4. Panel door shields
5. Peepsight
6. Back lugs and screws
7. Graflok back

1. Focusing panel springs.

NOTE: The bottom and top focusing panel springs (#22574 and #22575) are not interchangeable - to determine, position the ear with the elongated slot on the right and lastly, the straight edge will be to the center.

The springs are secured to the focusing panel at each end by a #1 x 3/8" round head screw (#15181-6); in turn, the panel and springs are secured to the back by a #4 - 40 x 1/4" round head screw (#20608) inserted through the center hole of the spring, through a washer, part #15851, and into the back moulding bushing.

2. Ground glass replacement (also panel catch).

a. Open the panel door and on each side remove the metal side shield retaining strip (#547) which is secured by four #0 x 3/8" flat head screws (#15080-3).

b. At this point, check catch, panel wing shield and door spring for replacement.

c. Position the ground glass screen (#2670) with the grain surface toward the lens. Clinch the panel wings beneath the retaining strips and tighten the screws uniformly to avoid cracking the glass.

3. Panel door spring (also panel door).

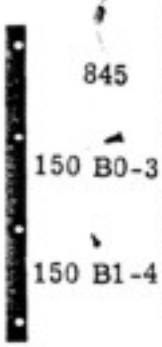
a. To replace either of the panel door springs (#845) it will be necessary to remove the door from the focusing frame. Proceed by removing the retaining strip (#547) from each side of the ground glass; then, lift the leather covering at the hinge and remove four #1 x 1/4" flat head hinge screws (#15081-4).

b. Drive out the hinge pin to remove broken spring. Position the new spring so that the straight ends extend inward without tension. Grasp one straight end and pull 1/8" - 1/4" to place tension on the spring. If the tension is sufficient to lift the door, form offset on each terminal so that it will lay flat against the hinge; then, cut off excess of 3/16".

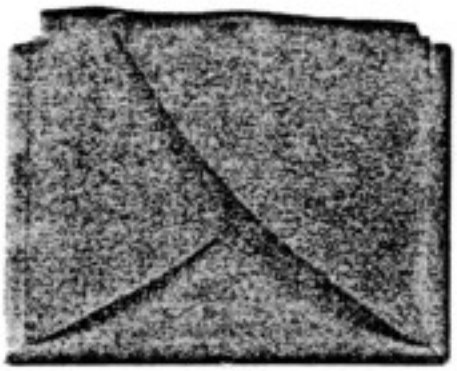
c. Reassemble the door, check side binding and the catch and, if necessary, adjust the catch arch before reassembling the ground glass.

(Cont. on page 4D)

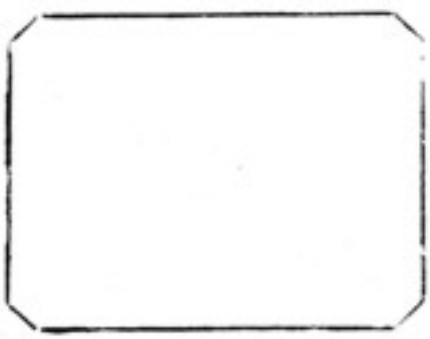
2672



547



2693



2670

104 B6-4

22192

(SEE NOTE)

22196

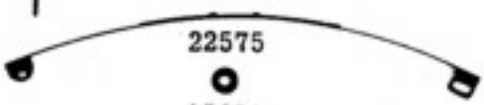
22194

110 B2-3

22193

151 B1-6

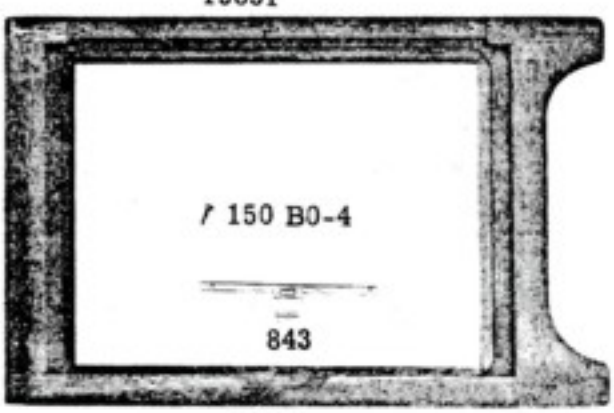
20608 ← NOT AVAILABLE



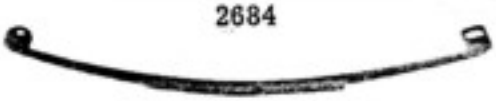
22575

15851

21993



2684



22574

Sim-14

			List Price
Cat. No. 9112 GRAPHIC BACK COMPLETE (Obsolete, replaced by Graflok Back Cat. No. 9299)(Includes 16026 and 30039)			See below
Order the following parts for replacement only			
16026	FOCUSING FRAME ASSEMBLED (includes the fourteen parts listed below)		$9.60
150 B0-3	Screw - retaining strip	(3/16" #0 FH L5)	.01
150 B0-4	Screw - Catch to frame	(1/4" #0 FH P22)	.01
150 B1-4	Screw - panel to frame	(1/4" #1 FH L17)	.01
151 B1-6	Screw - spring to frame	(3/8" #1 RH L5)	.05
547	Strip - shield retaining		.10
843	Catch - panel catch		.15
2670	Screen - ground glass		1.00
2684	Frame (wood) (not leather covered)		2.70
2693	Panel door assembled (not leather covered)		1.90
845	Spring - panel door		.08
2672	Shield - panel wing		.15
16016	Covering (frame and panel assembly)		.85
22574	Spring assembly - bottom of focusing panel		.45
22575	Spring assembly - top of focusing panel		.45
30039	BACK FRAME ASSEMBLY		11.00
Cat. No. 9107 SWINGING PEEPSIGHT (includes first five items below)			Ref
104 B6-4	Screw - peepsight	(1/4" #6-32 OH P16)	.15
22192	Cap - peepsight	(specify type - see page 4)	.18
22193	Spring - peepsight		.03
22194	Ball peepsight		.03
22196	Peepsight		.48
21993	Back frame		9.70
110 B2-3	Screw - back to body	(3/16" #2-56 Bind H L 12)	.01
15851	Washer - spring screw		.03
20608	Screw - panel spring to back (1/4" #4-40 RH P22)		.01
Cat. No. 9299 GRAFLOK BACK COMPLETE - 4 x 5 (with Ektalite) (Refer to Section 6 to order parts except for the following items)			See Price List

Pacemaker Part as listed	Order this Anniversary Part		
30921-P6 (figure 8-2)	110 B2-3	Screw - Upper Mounting (3/16" #2-56 Bind H)	.01
30921-P7 (figure 8-1)	110 B2-3	Screw - Lower Mounting (3/16" #2-56 Bind H)	.01
31710-G3	31710-G5	Back Assembly (less panel & hood)	~~11.35~~ 15.00
31914-P1 (figure 8-28)	31914-P3	Back	8.40

Order by part number and complete name. State quantity.

193-355 Prices are subject to change without notice.

4. Panel wing shields.

a. To replace a panel wing shield (#2672) remove the corresponding retaining strip and pry up the metal lip of the door slightly.

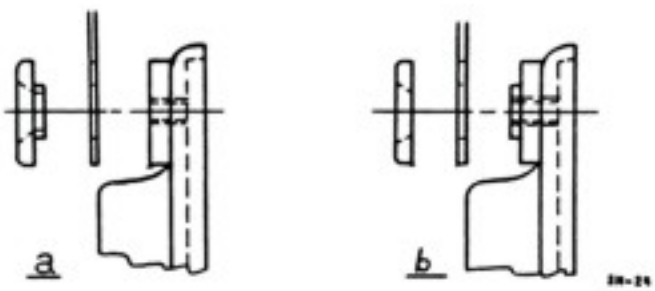
b. Clean the metal opening; apply cement 3/16" wide to both sides of one straight edge of the shield; insert this cemented edge in the lip and peen the lip which clamps the new shield.

c. Replace the retaining strip.

5. Peepsight.

Remove the peepsight screw (#104B6-4) and clean the cap (#22192), peepsight (#22196), two balls (#22194), two springs (#22193) and the back bushing with cleaning solvent. Stretch the springs slightly, lubricate the bearing faces of the peepsight with a wax base lubricant and reassemble.

NOTE: Cap (#22192) should be ordered to accommodate the peepsight bushing surface of the back. The cap has been made with and without the bearing shoulder. The cap and back of figure a is currently supplied; the cap of figure b will be supplied only on request.



6. Back lugs and screws.

If the threads of the back lugs, positioned in the camera body beneath the leather, should be stripped by over turning or cross-threading the back screw (#11082-3), it will be necessary to retap the lug with a #3-48 tap and use a #3-48 x 3/16" binding head screw.

7. Graflok back.

a. Refer to Section 6 for disassembly and reassembly of the Graflok back.

b. Description of mounting screws, shown in figure 4-1 and 4-2 in Section 6, are not accurate descriptions of screws used on the Anniversary Graflok back. See Parts List of this section.

Focal Plane Shutter

Special precautions for:

1. Curtain setting plate
2. Tension setting plate
3. Curtain and roller replacement

Special tools: Tension setting clamp, #28452

Tension lock nut wrench, #28442

All metal parts of the shutter plates may be immersed in cleaning solvent - dry before reassembly and lubricating as recommended below. Remove excess lubricant and never allow any lubrication to come in contact with shutter curtain.

1. Curtain setting plate, (#24780)

a. Remove the back.

NOTE: Set the curtain at "O" (full open aperture) and mark the position of the top curtain strut on one side of the camera body.

b. From the curtain setting plate, remove the five #1 x 1/4" oval head screws (#152B1-4). Note any spacer washers (#20600) that may be placed at either end of the roller.

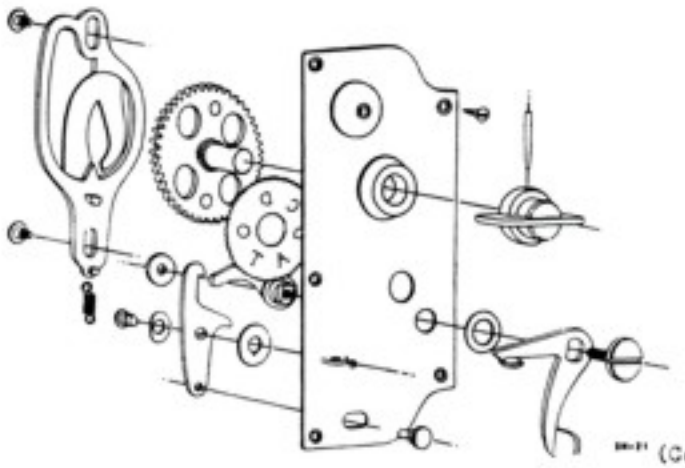
c. If it is ever necessary to remove the release lever (#22015) file off the peened end of the release lever screw (#24665). Reassemble, peen nut, and check for binding of bushing or too tight screw.

d. Check brake spring of the escapement (#3388) in respect to its latch of the master gear stop pin. Hold the shutter release lever back and rotate the winding key until the stop pin snaps beneath the flat spring and against the escapement -- it should not be possible to reverse the winding key and force the stop pin back under the catch end of the flat spring. This spring should latch about 1/64" below the top of the pin. If it has been necessary to remove the escapement screws (#867) apply a touch of glyptol cement to the threads before assembly.

e. Lubricate the mastergear stop pins with wax base lubricant, and lubricate the curtain roller bearings and pinion with graphite grease.

f. Set the curtain setting plate so that "O" appears squarely in the indicating hole when the top gear stop pin is stopped against the escapement.

g. Wind the curtain so that its top strut lines up with the index mark on the side of the body. Hold the winding key against the stop and reposition the plate; check the side play of the roller and if more than 1/64" use spacer washer (#20600) at the case bearing end of the shaft. Reassemble two screws, test run, check the top strut and index, if satisfactory, wind the curtain and release -- note the position of each curtain strut in relation to the inside frame. If necessary, adjust by raising or lowering the pinion gear one tooth at a time.



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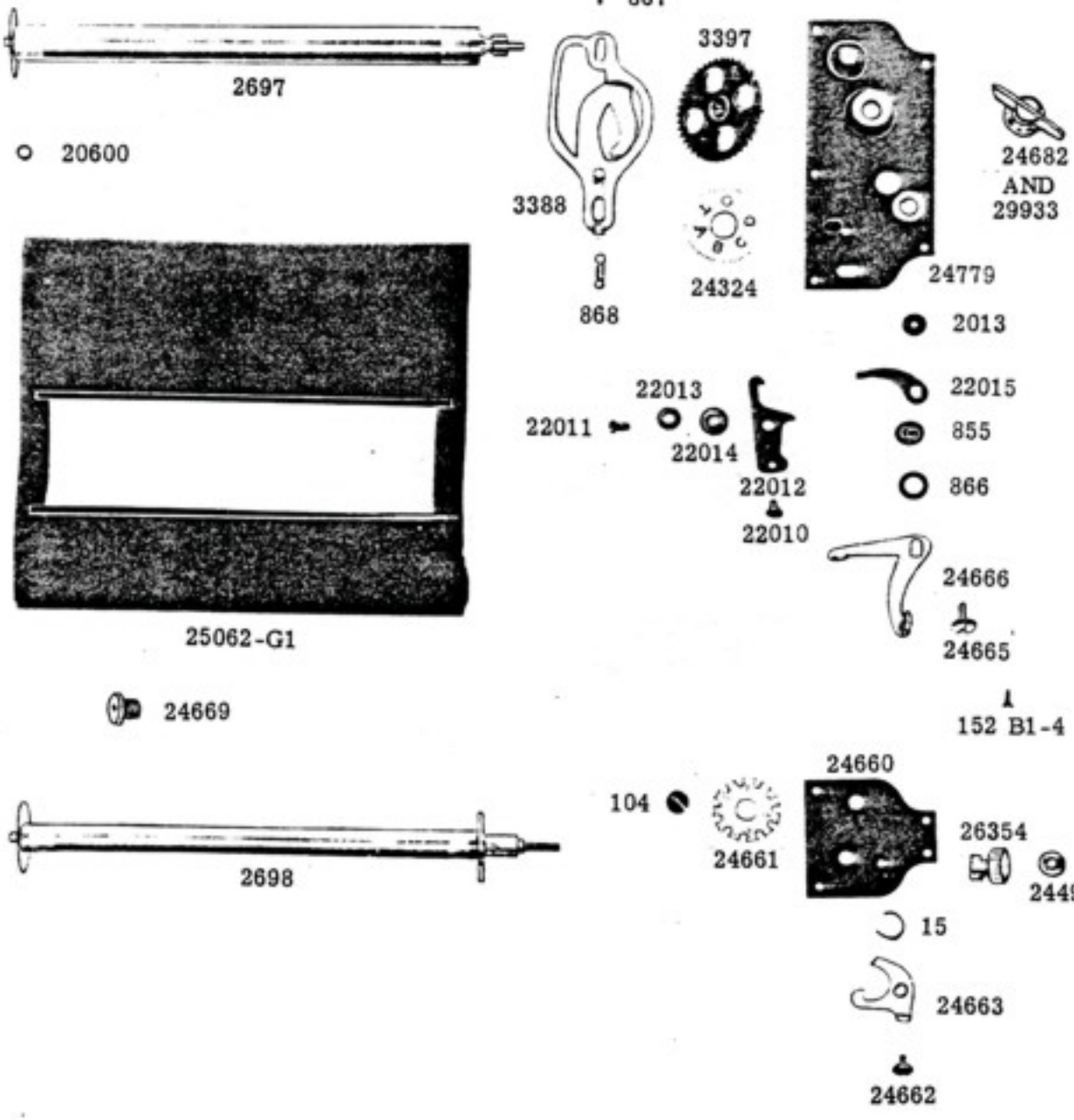

867
2697
3397
20600
3388
24682
AND
29933
24324
24779
868
2013
22013
22015
22011
22014
855
22012
866
22010
24666
24665
25062-G1
24669
152 B1-4
24660
104
24661
26354
24496
2698
15
24663
24662

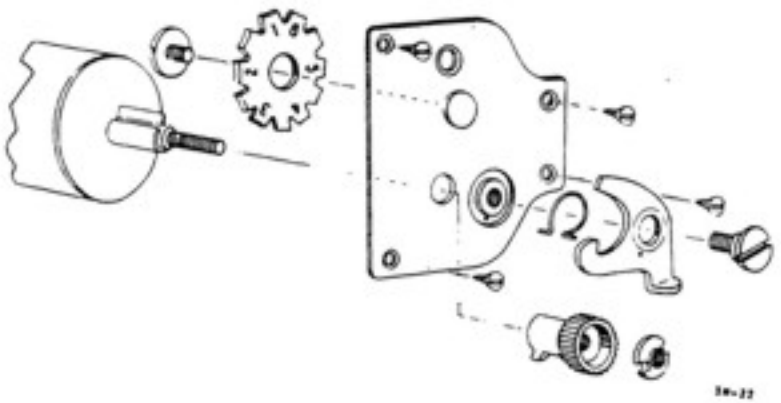
		List Price
24664	TENSION SETTING PLATE ASSEMBLY	$ 2.40
15	Spring - tension dog	.08
104	Screw - tension indicator gear	.15
24496	Nut - tension snail lock	.20
24660	Plate - tension (order tension setting plate assembly 24664)	--
24661	Gear - tension indicator	.50
24662	Screw - tension dog	.08
24663	Dog - tension	.30
26354	Snail - tension plate setting	.40
152 B1-4	Screw - plate to body (1/4" #1 OH L5)	.03
24780	CURTAIN SETTING PLATE ASSEMBLY	9.80
855	Bushing - shutter release (order 2013 and 24665)	.15
866	Washer - release	.05
867	Screw - escapement	.05
868	Spring - escapement	.15
2013	Nut - escapement lever (order 855 and 24665)	.12
3388	Escapement assembly	.40
3397	Gear - master	1.75
22010	Button - shutter lock	.10
22011	Stud Screw - latch lock	.05
22012	Latch - shutter lock (order 22010)	.10
22013	Washer - escapement (spring washer)	.03
22014	Washer - lock	.03
22015	Lever - escapement (order 855, 2013 and 24665)	.10
24324	Gear - curtain slit indicator	.50
24665	Screw - release lever (order 855 and 2013)	.05
24666	Lever - shutter release (order 855, 2013 and 24665)	.25
24682	Winding key	.50
24779	Plate - setting (order curtain setting plate assembly 24780)	--
29933	Pin - winding key	.01
152 B1-4	Screw - plate to body (1/4" #1 OH L5)	.03
30040	CURTAIN AND ROLLER ASSEMBLY	10.00
2697	Roller assembly gear	1.75
2698	Roller assembly - tension	2.20
25062-G1	Curtain Assembly	5.50
20600	Spacer Washer - curtain roller	.01
24669	Bearing - roller	.35

Reassemble the back (with the focusing panel removed), set the curtain slit at "A" and set the tension at "1". Release the curtain and note if it rebounds at the lower edge of the opening - this fault may be corrected by dropping the upper roller gear one tooth off the plate gear.

2. Tension setting plate (#24664)

a. The tension dog spring (#15) may be replaced without removal of the plate.

b. If the entire plate is to be removed, use the special tension lock nut wrench and pliers to remove the tension snail lock nut (#24496). The tension snail (#26354) may now be unscrewed from the tension roller shaft - it may be necessary to wind the tension to "6" before the tension snail can be unscrewed. At this point the four #1 x 1/4" oval head screws (#152B1-4) are removed and the plate lifted from the camera body.



c. Lubricate the case and plate bearing points of the tension roller shaft with graphite grease; and, lubricate the internal tension spring with a few drops of light oil inserted through the left end (see below, paragraph 3C).

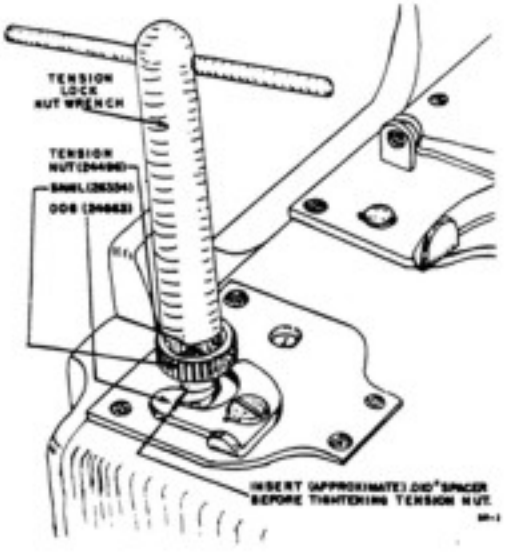
d. Reassemble the tension setting plate over the threaded end of the shaft and lock the tension setting clamp to the shaft. Check side play of the roller and if more than 1/64", use spacer washer (#30600) at the case bearing end of the shaft. Wind the spring several turns and then draw the curtain out by hand several times to remove curtain slack. Slowly release the tension - do not allow the tension setting clamp to spin free. Lift the tension plate; set the indicator gear so that "I" appears in the indicator hole; turn the one tooth of the pinion clockwise from the vertical about 30 degrees and now engage the counter gear and the one tooth pinion. If it is not possible to wind the tension to "2" the pinion and gear are not properly engaged - repeat and vary the 30 degree suggestion slightly.

e. With the tension setting clamp, wind the tension to "6"; hold the tension; lift the plate and reset the counter to "1". Check for correct mesh of pinion and indicator gear - then assemble two screws. Remove the tension setting clamp and rethread the tension snail to the shaft. Screw the snail down until it binds on the plate - then, back off a partial turn until the dog and snail catches engage. Insert spacer (.005" to .010") between the catches, assemble the tension nut and tighten. Check the snail for binding on the plate - if necessary, loosen the locknut and back off snail a full turn, tighten lock nut again and check. Test run several times at high and low tension; then, set tension at "I" and the curtain at "0" invert the camera and release the shutter - the curtain should roll slowly and evenly to the roller and latch with release lever held back - if not, it will be necessary to add more tension - one turn at a time until the shutter operates inverted. This additional tension may be added by removing the plate mounting screws and rotating the plate counter-clockwise without disengaging the pinion and indicator gear. Check operation as instructed in paragraph 1 g. Reassemble the four screws when tension is satisfactory.

3. Curtain and roller replacement.

a. If the curtain and rollers are not being replaced as a unit, remove all old cement from the rollers and rough the curtain, and be sure that the ends of the curtain are square which will facilitate in keeping the curtain ends as nearly parallel as possible to the longitudinal axis of the rollers when the parts are cemented together. Examine the curtain for pinholes, tears or weak points.

b. For information of assembly and lubrication of the curtain and tension setting plates, see corresponding paragraphs 1 and 2 above.

c. Examine the tension roller spring by unscrewing the left bushing, then unscrew the right bushing. Lubricate spring very lightly with recommended light oil or replace tension roller if the spring is badly worn.

d. After the new curtain or roller has been replaced and adjusted, it is additionally cemented to the roller. The top gear roller is set at "0" and released, a line is drawn across the center of the roller which will mark a guide on the inside surface of the curtain. Cement is applied 1/2" wide on this guide line. The lower tension roller is marked with a guide line after the smallest aperture has been wound on the top roller - cement is applied 1/2" wide on this guide line. Reassemble the back and check.